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AUTHOR Dunn, Samuel I.
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ABSTRACT

Fundamental changes that will affect American higher education during the next 20 years are discussed with specific reference to residential colleges. It is suggested that many traditional residential colleges will have difficulty meeting the challenges of a changing society and will be forced to close their doors. The development and adoption of external degree programs, technological developments, lowered public expectations about a college education, economic factors, and social change will all affect the future of these colleges. Several examples of external degree programs (EDP) and changing patterns of college attendance throughout the history of higher education are described. Technological developments that allow students to obtain a college degree without going away to college are also described. The increase of short term career development courses and lifelong learning will also exert a major impact on higher education as well as the increasing cost of maintaining a traditional educational establishment and changes in demographics and laws in the United States. It is projected that for these and other reasons 25 percent of today's liberal arts colleges will be closed within 20 years. The most important requirement for survival is the willingness of the residential institutions to change to meet the challenges of the future. (SF)

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A Scenario for Residential Colleges

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Samuel L. Dunn
Director, School of Natural and Mathematical Sciences
Seattle Pacific University
Seattle, WA 98119

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THE COMING OBSOLESCENCE

A Scenario for Residential Colleges

Many changes have ocurred in higher education in the past twenty years. Some are important; others are not. One of the most significant changes has been the adoption of scientific management techniques by higher education. Such tools as mathematical modelling, long range planning, funds control management, forecasting, and scientific marketing are commonly used by university administrators. Many schools that refused to adopt these methods have already closed: others which should have closed for other reasons have been hanging on because of the astute use of these methodologies.

Another important change has occurred in the public's view of higher education. No longer is higher education held on a high pedestal. No longer does it stand aloof from the close scrutiny to which other societal institutions have been subjected. No longer is a higher education viewed as the mainline route to the good life. An indication of this change is the new understanding that colleges and universities must give account of their acceptance and implementation of the goals of society. The courts of the land stand willing and able to enforce the public expectations. The courts are now acting as big brothers to educators, helping them make decisions.

These changes are important, but by and large they are front office changes. The typical course is still delivered by the same typical professor standing in front of a standard class of students. The changes described above and others have been duly noted and decried in the faculty club, and then largely ignored.

In the next twenty years, however, there will be fundamental changes in higher education that <u>will</u> effect the delivery of instruction, and <u>will</u> effect what the typical professor does. The coming changes will be more drastic, more basic, and more far-reaching in their effects than those of the recent past. The changes will be so significant that the very existence of higher education as we know it today will be threatened. Many institutions won't be able to survive the transition. By the year 2000, twenty-five percent of the currently existing residential liberal arts colleges will be gone. Many other colleges will find their existence threatened and will be searching hard for ways to survive.

In this paper several reasons will be given for the coming disappearance of so many colleges. The reasons to be discussed include: the development and adoption of external degree programs; technological developments; changes in public expectations about a college education; economic factors; and social changes. At the end of the paper some indication will be given as to the necessary conditions for the survival of the residential college.

External Degree Programs

One development which will help set up the coming obsolescence is the widespread introduction and use of external degree programs. To obtain a better perspective about these programs, let's look back one hundred years into the history of higher education in the United States. Going back to the 1870's we find many of the land grant institutions being established. Most of them were four year liberal arts colleges with programs in teacher education and agriculture. All were residential colleges. The typical student went to the college town to get his or her education, and probably stayed in that college until the degree or course of study was completed. Not everyone was able to complete a degree in four years, because today's massive student aid programs were unknown. Many students had to drop out in order to work for the money needed to complete a college degree.

There was little student movement from college to college. The mobility that did occur came largely at the end of the undergraduate experience, when some students, relatively few in number, went to other colleges for graduate level programs. Most of the movement was to the East to the established graduate schools.

As we move into the twentieth century we find it more common for students to move from college to college, largely because of greater mobility and affluence. Most students, however, were still associated with one institution as they

obtained a college education. Moving to the period between World War I and World War II we find even more students transferring between colleges.

A significant jump in the percentage of students transferring from college to college occurred at the end of WW II. Many students whose educational programs had been interrupted by the war took their veteran's benefits checks to institutions other than the institution in which they started their college programs. Many other veterans started educational programs in colleges near the bases where they had been stationed or in states they had grown to love while in the service. Loyalties to the home town college or the State U. were displaced by other considerations.

Two other movements got into high gear after the war. Hundreds of junior colleges were built in the fifties and sixties, making it possible for a student to obtain half of a college degree without leaving the hometown and at low expense. The second development was the widespread introduction of correspondence course programs by the major state universities. By 1970, it was possible to obtain almost all the courses needed for a degree by correspondence. Most universities, however, put limitations on the number of credits that could be counted toward a degree. Typically, no more than one half to three-fourths of the credits required for graduation could be earned in correspondence courses. These programs were unsuccessful in the sense that over one-half of students starting courses did not complete them.

This brings us to the seventies, when a new feature has

been added to the educational landscape--the external degree program (EDP). The salient characteristic of the EDP is that students spend little or no time on campus as they pursue a college degree. The British Open University program is probably the best known example of such a program. In the Open University system the student accesses courses by radio or television, obtains tutoring at centers close to home, and spends only a few weeks each year at a traditional university.

There are several similar programs in the United States, of one type or another. For example, California State University at Dominguez Hills has an external degree program in which a student never has to go to the campus. The student sets up a course of study by correspondence and phone, negotiating with an institutional representative. The student works through the required reading and writing assignments, all the while maintaining close communications by phone and mail with professors at the university. All indications are that this accredited program is of high quality. The important feature emphasized here is that the student doesn't go to campus at all [11].

Another example of an EDP is the Thomas Edison College, a state sponsored program in the State of New Jersey. This college has already given over 1000 degrees in EDP mode. The state of Connecticut has set up an organization called the Board of State Academic Awards; the Board has already awarded over 250 degrees in EDP mode. An example of an EDP at the graduate level is the American School of Management in the state of Wisconsin. This organization is now seeking accredi-

tation to offer doctoral programs in Business Administration and Management, Public Administration, Health Administration, Management Science, and others.

Probably the best known program in the United States is the Regent's External Degree program of the University of the State of New York [10]. Over 6000 degrees have been awarded by Regent's. Several tracks to a degree are available. In one track, the student takes courses at any accredited institution and sends the transcripts to Regent's: a degree is awarded after the correct number and type of credits have been earned. Such credits may be earned through TV courses and newspaper courses. A second track moves the student through tests, usually based on a traditional course. Several hundred tests are available which the student may use to earn required credits. A third track, also involving testing, is the acquisition of all the credits necessary for a major just by getting a sufficiently high score on an advanced area GRE test. A fourth track involves evaluation of work experience. In an extreme case, a panel of experts can award a degree solely on the basis of extensive evaluation of the work experience record of the individual. The typical cost to the student for the Regent's EDP is $500 to $1,000.

These programs will become more numerous and more acceptable in the future. Accrediting agencies will help police the quality of these programs, making an attempt to squash diploma mills, which have been operating in EDP mode for years. The major obstacle to these programs has been the delivery of the curriculum to the student. These obstacles

can now be overcome by the delivery technologies ready to be implemented.

Technological Developments

While higher education is setting up procedures which will permit a student to obtain a college degree without going away to college, the scientists and engineers are rapidly developing new and existing technologies which make possible the delivery of the college curriculum to the home. One of the developments which is starting to make this possible is the inexpensive, large capacity, small computer. Computers are becoming smaller in size, greater in capability, and less expensive. Bork reported [6] that the cost of electronics has been going down 30% a year and the cost of memory has gone down 50% a year for the past four years.

The Radio Shack computer, costing around $500, is well known; this price makes it possible to place a computer in every home. It is a good computer, but has a limited memory. Nevertheless, one can use it to solve most of the problems one would encounter in an undergraduate mathematics curriculum. The underground has it that one vendor will market in 1981 a $500, million-byte computer. A computer of that size and that price brings undreamed of possibilities to higher education and to the home. Sylvia Sharpe predicted [2] that by 1990 computers would cost about one tenth of today's cost, with the cost/performance ratio increased (sic)--should be decreased --by a factor of four.

Software development is keeping pace with hardware development, but the dramatic decrease in cost is not seen here.

Readers may recall the great interest in computer assisted learning (CAL) in the sixties and early seventies--the predictions of a rapid switchover to CAL did not come true. Even the prestigious Carnegie Commission, writing on the technological revolution in higher education [7], did not foresee the difficulties that would be encountered in developing courseware. The only notable successes were in the use of the computer for individualized practice, simulation and problem solving. The early prophets went back to the research labs to do more homework about CAL. After years of study in artificial intelligence and educational theory, after years of experimentation, and after billions of dollars of research has been completed, educators and computer scientists are now in agreement that curriculum delivery is possible by the electronics based technologies. A big drive is now being mounted to implement these state of the art systems. By 2000, the systems will be fully implemented.

Video discs and video tape machines are now ready for the home market. The October 21, 1978 issue of Time carried a large advertising supplement describing now available or soon available units. Although costs are still high, the manufacturers are predicting high volume sales. It is anticipated that video discs will soon sell for a price close to the price of a phonograph record. Such a disc will provide up to two hours of video information. Education will take advantage of the disc technology by providing lectures and demonstrations on discs to be used in home entertainment centers.

By the year 2000, 80% to 90% of the homes in the United States will be connected to a video cable. At that time,

the cable systems will be interactive, allowing entry and acquistion of information by the customers. Such systems have been tested in the United States; Canada has announced the introduction of such a system. A Canadian Department of Communications press release, dated August 18, 1978, partially given below, indicates the multiple uses of such a system [8].

> OTTAWA, August 15, 1978 — The Department of Communications has developed a technology which could have profound effects on communications in Canada, Minister of Communications Jeanne Sauve announced today. It consists of a new two-way TV system, called Videotex. The development makes Canada a world leader in two-way television technology.
>
> Users of the Canadian Videotex system will be able to retrieve, by phone or interactive cable, information stored in various computer data bases and have it displayed on modified TV receivers or business video terminals. Users would also be able to transmit graphic, tonal or textual information to each other or to a data bank. Connected to the TV would be a pushbutton unit like a pocket calculator or a keyboard unit like a typewriter for retrieving or inserting information.
>
> Videotex, like systems rapidly being developed elsewhere in the world, particularly in England and France, will expand the capabilities of home TVs through the addition of new services.
>
> Another part of the same release says,
>
> "The possibilities of the system," Mme Sauve said, "are limited only by our imagination." Students could access many data bases for almost immediate display of data or graphics on their TV screens. Architects could transmit drawings to clients across town or across the country. Homebound persons could take university courses. The system would also make possible new outlets for artistic expression. Emergency services such as fire and burglar alarm systems could be provided. People in isolated areas would have access to a wide range of information and entertainment previously available only to those in the urban south.

This is a Canadian release; the South referred to here is southern Canada.

Cable systems of the future will be better in another way: many more channels of information will be available to the home. Consider a system in which there are forty channels accessible, twenty of which are dedicated to education, five being used for higher education. Transmitting only ten hours a day, five days a week, the system makes possible the delivery of 500 half-hour educational programs to the home each week. Customers will pay for these programs through a flat monthly charge and a metered usage system. Several large U.S. communications companies are working on the hardware and software for these systems. Fibre optics hardware may be utilized in these systems [8].

The big computer and communications companies will enter the educational delivery business using their own links to supplement the usual communications networks. One current example of this development is the acquisition of market rights to PLATO by Control Data Corporation. The PLATO system, developed at the University of Illinois at the cost of millions of tax dollars, already has available hundreds of tested courses and lessons. CDC is hard at work preparing new curriculum materials, and has established, at last count, 26 educational centers in the U.S.

The last type of technology to be discussed here is satellite technology. It is probable that by the year 2000 there will be several national television stations telecasting color TV signals from "stationary" satellites. Ground stations for receiving signals now cost $3,000: by the year 2000 they will be much less expensive. Rather than each home having its own parabolic reception dish, it is more likely that each community

will have a dish or dishes to pick up the signal and transmit it to the home via cable. The introduction of sattelite-based transmission means that a nation-wide delivery system can be put in place without the necessity of interconnecting the communities of America by hard networks.

Thus we see that technologies are developed and will soon be in place which facilitate the delivery of the curriculum to the home. Students won't need to go away to get courses; they can get the courses in the living room or den.

Public Expectations

Public expectations for the college graduate will be lowered in the future. The BS degree holder will not be expected to have great familiarity with the past, with civilization, and with the arts. The typical graduate of the future will not be expected to have sharp analytic abilities, nor be able to philosophize in depth about himself and his environment.

Expectations will center around four or five concerns. First, the college program should top off the basic education of the individual, that is, the college graduate will be expected to be able to read and write. Second, society will expect the college graduate to be enculturated so that he or she can perform adequately in society. Desiderata would include the idea that the student should know how to participate in the democratic process, how to get a job, how to have a happy marriage, how to live in a computer-oriented society, and how to be a law abiding citizen. Third, the student should get some grounding in one discipline, not at a highly technical level, but enough to get a first job in a chosen field or

gain entry to a graduate or technical school. The high priority will be on short-term career development. The student will take a specific course, or course of study to get the desired job, or desired promotion. As discussed below, the student will be in continuous, life-long education. It will be possible to take another set of courses in another program to get the next job.

The expected level of instruction will not be high for undergraduate teaching. Using Bloom's taxonomy as a framework for discussion, the expectation level will be, by and large, at the first three levels; information, comprehension, and application [4]. Very little instruction at the level of synthesis, analysis, and valuation will be feasible. By 2000, most undergraduate curricula can be delivered at this level by machines.

Economics

A fourth set of reasons for the coming obsolescence relate to economics. Maintaining a traditional educational establishment in the year 2000 will be expensive, especially if a 20 to 1 student-faculty ratio is sought. Being labor intensive, colleges will need large amounts of cash to pay the required salaries. Costs of maintaining the physical plant will be high, with a much larger percentage of the cost going to energy procurement.

Most of these costs must be passed along to the student. Students, however, will not feel it worth their while to give up earning opportunities in order to study for four years.

Why should one spend all that money when one can stay at home, maintain a full time job, and work off a college degree over a period of several years? The expected lifetime earnings of people with college degrees will still be higher in the year 2000 than that of people without college degrees, just as it is now. However, lifetime earnings will not be significantly higher. Furthermore, the difference in expected lifetime earnings between those who go to the residential college and those who go through an external degree program will be negligible. A significant proportion of those desiring a college degree will not be willing to invest in the residential experience. Since some economists are now predicting a shortage in the work force in the late 80's, there may be even more economic incentives for young people to enter the job market, rather than going to the residential college.

Social Changes

A fifth set of reasons why many colleges will go under by the year 2000 relate to changes in the demographics and laws in the United States. For one, between now and 2000 there will be an absolute decline in the number of students in the 19-23 age group. Some experts believe there may be 20% fewer college age students ten years from now than there were in 1970. It appears that this number is high; there will be a decline somewhere between 10% to 15% [9]. There is already talk in some states of closing rather sizable institutions because of the current and/or expected decline in enrollments.

By the year 2000, we will be living in a society which is

changing more rapidly than it is now. Most adults will work in several different occupations in their lifetimes, and the jobs will be so different that many, if not most, will need to retrain from job to job. Older adults will expect to be in and out of educational programs all their lives. This point of view will change the presently accepted view that the formal education should be finished by age twenty-five. Why should it? Take your time getting an education! Go to work and start earning money! A degree can be obtained later!

A dramatic change will come with the introduction of the new Universal Service System. The Volunteer Army of the 70's has not worked out; military and political leaders are concerned about the defense preparedness of the United States. Work is now being done to prepare and enact a new conscription system. It is now projected that two years of service will be required of all high school graduates, both men and women. Man- and woman-power needs for the armed services will be filled first. The remainder will be placed in service organizations. Some type of veterans' benefits program will be created at the same time, allowing those completing their required service to enter educational programs of their choice.

Full implementation of the program at once will be disastrous for many colleges. The absence of two successive classes of Freshmen, tracked through for four years, will drive many colleges to bankruptcy. Many of the young people who would have gone to college will not do so after their two years of service because they will be able to get jobs on the basis of

their training and experience in the service. On the other hand, many who would not have considered college at all will enter formal educational programs. It is too early to call the outcome. For now, though, the implementation period looks grim.

In summary, the case is this. Many residential liberal arts colleges will be closed by the year 2000, for various reasons. One, there will be accredited programs available which will allow students to obtain a college degree without leaving home. Two, technological systems will be in place which will make it possible to deliver college curricula to the student in his or her home. Three, public expectations of the college degree will not be high. Four, it will be less expensive to study at home. Manpower shortages will cause economic incentives to be given to young people to enter the work force. Five, demographic changes and the Universal Service System will cause changes in the college pool. For these and other reasons, twenty-five percent of today's liberal arts colleges will be closed, with another fifteen to twenty percent in the docks. A majority of the colleges will be functionally obsolete.

Survival Strategies

The picture painted above is dark. Are things really that bad? Can any college survive? The answer is, "Yes." Some colleges will take advantage of the changes in the culture to build strong residential programs that will attract students. Others will find a market by combining residential and non-residential programs. Still other colleges will diversify into educational services of many kinds. But what should the residential colleges do?

First, they must do very well the things that good liberal arts colleges have done for the past fifty years, the most important of which is providing high quality instruction. Teaching must be excellent. Using Bloom's taxonomy again, the teaching level must move the student to the higher levels of objectives: synthesis, analysis, and valuation. The teachers will have to be so good that students will want to come to study under them. Professors in the surviving colleges will have to be up to date in their knowledge of their fields. They can't be five years behind, because five year old information will be available in the home.

A well developed and implemented social program will be necessary. Some students will want to go to the residential college in order to interact with other individuals, to find a spouse, to learn how to live with others, and to enjoy dorm life. Some students will find it necessary to study with others their own age in order to master the material. An integrated learning/living program will be a marketable feature in this regard.

Some colleges will survive because of a strong religion/values emphasis. A nominal emphasis will not be sufficient. Colleges which in the past depended on required chapel attendance, prayer before class, and a religious faculty will fall short in this area. The advertised ideology must permeate all aspects of campus life, including social life. Most importantly, the curriculum must be fully integrated with the ideology. Students will easily detect if the professed religion/values system is believed and implemented by the organization.

Surviving colleges must take advantage of the delivery technologies. Utilization of computer assisted learning for delivery of information will provide flexibility in delivery, and will free professors for more interaction with students and for more research. The college must be able to deliver some courses in disciplines for which there is no on-campus faculty.

Viable colleges will have to provide individually tailored programs to its students. Students will need flexibility in terms of length of courses and length of degree programs. Many students will want to obtain college degrees based on curricula organized around problem solving rather than based on a traditional discipline.

Surviving colleges will need a focused constituency, a constituency which believes that the college is doing what it says it is doing. The constituency must be informed. There must be close communication between the college and its supporters so that the concerns of the supporters are available to the college and the desires and intents of the college are communicated back to the constituency. Included in the supporters must be those who contribute operational funds to the college, for the students will not be able to pay the cost of their education.

A final requirement for survival will be a willingness to change. Faculties and administrators must be prepared to change teaching methodologies, curriculum, organizational structures, and living systems in response to societal demands. It will be

especially important to be prepared for rapid decision making and quick changes.

In conclusion, we go back to the question to survival. The good news is that any given college may be able to survive. The bad news is that many won't.

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